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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,223	01/22/2004	Peter C. Rieke	E-1563	1664

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EXAMINER	
SELLMAN, CACHET I	
ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/764,223	RIEKE, PETER C.	
	Examiner	Art Unit	
	Cachet I. Sellman	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/22/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) *27-38* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/15/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1- 26, drawn to a method, classified in class 427, subclass 569.

II. Claims 27-38, drawn to a product, classified in class 156, subclass 1+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made using a materially different process such as one that does not expose the surface of the polymer to a plasma.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Allan Tuan on January 19, 2006 a provisional election was made with traverse to prosecute the invention of Group 1, claims 1- 26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-38 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1,2, 9, and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Peyman et al. (US 4312575).

Peyman et al. discloses a method for increasing the hydrophilicity of a polymer surface by providing a polymer having a nonfuctionalized surface; subjecting the polymer to a plasma; exposing the polymer to a reactive gas which results in a functionalized polymer surface with increase hydrophilicity (column 4, lines 50-68 and column 5, lines 46-49) as required by **claim1**. The surface is exposed to a plasma and reactive gas simultaneously (column 7, lines 43-58) as required by **claim 2**. The plasma is an oxygen plasma (column 9, line 18) as required by **claim 9**. The polymer is a contact lens (abstract) as required by **claims 20-22**.

7. Claims 1,2,4-6, 9-10, 15-16 and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Buchwalter et al. (US 5340451).

Buchwalter et al. discloses a process for increasing the hydrophilicity of a

polymer surface by providing a polymer having a nonfuctionalized surface (column 2, lines 55-56 and column 4, lines 50-53); exposing the nonfuctionalized surface to a plasma (column 3, lines 20-22); and exposing the nonfuctionalized surface to a reactive gas (column 4, lines 38-41) as required by **claim 1**. Buchwalter et al. disclose that the step of exposing the polymer to a plasma and a reactive gas occur simultaneously (column 4,lines 33-49) as required by **claim 2**. The polymer used can be a polyhalogenated polymer (column 4, lines 54-68) as required by **claim 4**. The polyhalogenated polymer can be polytetrafluoroethylene or polyvinylidenedifluoride (column 4, lines 54-67) as required by **claims 5 and 6**. The plasma can be oxygen, or oxides of nitrogen (column 4, lines 39-41) as required by **claim 9**. The reactive gas can be hydrazine (column 7, lines 38-40) as required by **claim 10**. The polymers are immersed in water after exposing to plasma and reactive gas (column 6, lines 1-8) as required by **claims 15-16**. The functionalized polymer surface contains acidic and basic functional groups such as hydroxyl groups, carboxylic acid groups, peroxides or ester groups (column 5, lines 61-64) as required by claims **23, 24, and 25**.

8. Claims 1-5, 7-8, and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Koh et al. (US 5783641).

Koh et al. discloses a process for modifying a polymer surface by irradiate ion particles with energy on the surface while blowing a reactive gas directly on the polymer surface to decrease the wetting angle of the polymer surface (decreasing the wetting

angle increase hydrophilicity) (abstract and column 4, lines 9-12) as require by **claim 1**. The reactive gas is blown directly on the polymer while exposing the polymer to the plasma (column 5,lines 62-65) as required by **claim 2**. The ion beam is first formed using particles such as argon, oxygen, air and etc. (column 5, lines 18-30) then the reactive gas is introduced into the chamber (column 5,lines 31-38) as required by **claim 3**. Any polymer with carbon, oxygen, nitrogen, fluorine, and silicon bonds can be used such as polycarbonate, polymethyl methylacrylate, polyvinylidenefluoride, and polyethylene (column 4, lines 54-62) as required by **claims 4,5,7 and 8**. The reactive gases used to prepare hydrophilic functional groups can be oxygen, hydrogen, nitrogen, carbon monoxide, or ammonia (column 5,liens 55-57) as required by **claims 10 and 11**.

9. Claims 1,2, 7-8, 10 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (US 5346728).

Yoshida discloses a method treating a polymer with a nonfunctionalized surface by exposing it to a plasma and reactive gas, which increases the hydrophilicity of the polymer (column 1, lines 63-68 and column 2, lines 1-15) as required by **claim 1**. The surface is exposed to the plasma and reactive gas simultaneously (column 1, lines 63-66) as required by **claim 2**. The polymer can be polyethylene or polyacrylate (column 2, lines 8-14) as required by **claims 7 and 8**. The reactive gas used is iodine (column 1, line 65) as required by **claims 10 and 14**.

10. Claims 1, 2, 9-11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Feurer et al. (4409258).

Feurer et al. discloses a process for increasing the hydrophilicity of contact lenses by contacting its surface with an ion beam and reactive gas (abstract) as required by **claim 1**. Feurer teaches introducing the ion beam and the reactive gas simultaneously (abstract) as required by **claim 2**. The polymer can be polymethylmethacrylate (column 3, line 44) as required by **claim 8**. The reactive gas can be O_2, H_2O, N_2O, N_2, NO_2, NO, N_2O_3, CO_2, CO or NH_3 (column 1, lines 56-58) as required by **claims 9-11 and 13**.

11. Claims 1, 4-8, and 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lidel (US 3761299).

Lidel discloses a process for altering the surface characteristics of polymeric materials such as increasing hydrophilicity (column 3,lines 12-21) by exposure to a reactive gas, which has been activated by radio frequency electromagnetic radiations to cause a glow of gases (i.e., a glow discharge plasma) (abstract and column 13, lines 55-63) as required by **claim 1**. The polymeric material can be polycarbonates, polyethylene, polystyrene, polytetrafluoroethylene, and polypropylene (column 5, lines 10-21) as required by **claims 4- 8**. The reactive gas can be N_2O_3, NO NO_2, ClO_2, or O_2 (column 3, lines 25-35) as required by **claims 10-13**.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 17, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buchwalter et al as applied to claim 1 above in further in view of Covington (US 4131696).

The teachings of Buchwalter et al. as applied to claim 1 are as stated above.

Buchwalter et al. does not teach exposing the functionalized polymer surface to a liquid phase reactant and heating the reactant to induce growth of a metal oxide on the functionalized polymer surface, or rinsing the polymer surface with NaOH after forming the metal oxide as required by **claim 17-19**.

Covington discloses a method of treating a contact lens made of poly methyl methacrylate with an inert inorganic hydrous oxide to render the surface of the lens wettable (abstract). The lens is immersed in the liquid then later rinsed with water or a saline solution (column 2, lines 34-36) to remove any excess and non-adhering particles

(column 4, lines 16-14). Treatment in the colloidal hydrous metal oxide results in an adhesion of colloidal particle to the surfaces of the lens, which in turn increases the wettability of the lens by fluids (column 2, lines 42-45).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Buchwalter et al. to include the step of exposing the polymer to a liquid reactant and heating to form a metal oxide as taught by Covington. One would have been motivated to do so because both Buchwalter et al. and Covington discloses processes for improving the wettability of polymer surfaces by exposing them to an aqueous solution of a metal salt (Buchwalter abstract) and Covington further discloses that exposing the polymer to a solution of metal oxide prolongs the wettability of the polymer (column 2, lines 42-52) therefore one would have a reasonable expectation of success in forming a functionalized polymer surface with increased hydrophilicity.

14. Claims 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feurer et al. as applied to claim 1 above in further view of Goldenberg et al (US 4734475).

The teachings of Feurer et al. as applied to claim 1 are as stated above.

Feurer et al. does not teach that the functionalized polymer surface includes functional acidic, basic or neutral functional groups as required by **claim 23** or alcohol or thiol groups as required by **claim 26**.

Goldenberg et al. discloses a contact lens with a wettable surface, which consists of a hydrophobic polymer that has hydrophilic units attached thereto. The hydrophilic units are alcohol, thiol, urea, thiourea, sulfite, bilsulfite or thiosulfate (abstract). The contact lens can be made out of polymethylmethacrylate (column 6, line 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process taught by Feurer et al. to include neutral functional groups such as alcohol or thiol as taught by Goldenberg et al. One would have been motivated to do so because both teach processes in improving the hydrophilicity of contact lenses and Goldenberg et al. discloses how alcohol and thiol groups can increase the hydrophilicity of polymers such as polymethylmethacrylate therefore one would have a reasonable expectation of success in forming a hydrophilic polymer surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cachet I. Sellman whose telephone number is 571-272-0691. The examiner can normally be reached on Monday through Friday, 7:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cachet Sellman
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TIMOTHY MEEKS
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